

Soil Temperature

Topic: Land and Soil

Objectives: Measure soil temperature

Grade Level: all (early grades will need adult help with measurements and handling the thermometer.)

Time: 10 – 15 minutes

Materials: dial or digital probe thermometers, long finishing nails approximately the same length as the thermometer probes, small blocks of wood 8 – 10 cm (3 – 4 inches) thick, hammers, timers or watches, writing pads, pens or pencils

Vocabulary:
insulator
probe

Location: near the weather instrument shelter

Background: Soil acts as an insulator to the air temperature. In this activity you will measure the soil temperature at several different depths and compare it to the air temperature.

Advance Preparation: Drill holes through the center of each of the blocks of wood. The holes should be just slightly wider than the diameter of the thermometer probes.

Procedure:

1. Together with a partner, push a finishing nail straight into the ground to create a channel for the thermometer probe. If the soil is hard, use a hammer to hammer the nail into the ground. Carefully remove the nail by gently twisting it.
2. To take the first soil temperature measurement, insert the thermometer probe through the hole in one of the wooden blocks. Gently push the thermometer probe into the channel you made in the soil until the block of wood is resting on the soil surface. Do not hammer or force the thermometer into the soil. This will damage it. Wait two minutes and then read the soil temperature. Record this temperature.
3. Take a second soil temperature at a deeper level by removing the thermometer from the wooden block. Gently push the thermometer into the soil channel until the dial is at ground level. Again, do not force the thermometer. After two minutes, read and record the temperature.

Questions to think about and discuss:

1. Compare the two soil temperature measurements. What do you think accounts for your findings?
2. Read the current air temperature at the weather instrument shelter. How does the air temperature compare to your soil temperature readings?
3. Suppose you took more soil temperature measurements at increasing depths. How do you think these temperatures would compare to those that you recorded?
4. Compare your soil temperature findings to those of some of your classmates. Are they the same? What do you suppose might account for any differences in soil temperature measurements?